

IN THE CLAIMS

This listing of the claim will replace all prior versions and listings of claim in the present application.

Listing of Claims

1. (previously presented) A disk storage system comprising:
 - a first plurality of disk drives storing data;
 - a second plurality of disk drives storing data;
 - a first loop used to transfer data to said first disk drives;
 - a second loop used to transfer data to said second disk drives;
 - a first plurality of communicating lines coupling said first loop with said first disk drives and coupling said first loop with said second disk drives;
 - a second plurality of communicating lines coupling said second loop with said first disk drives and coupling said second loop with said second disk drives;
 - a first plurality of connecting parts coupling said first communication lines and said second communication lines with said first disk drives;
 - a second plurality of connecting parts coupling said first communicating lines and said second communicating lines with said second disk drives;
 - a disk controller comprising:
 - a first disk communicating port coupled to said first loop, and communicating with said first disk drives via said first loop,
 - a second disk communicating port coupled to said second loop, and communicating with said second disk drives via said second loop,
 - a host communicating port communicating with a host unit,

a cache memory storing data, which is communicated between said host communication port and said first and second disk communicating ports, and
a processor controlling said host communicating port, said first disk communicating port, said second disk communicating port and said cache memory.

2. (original) A disk storage system according to claim 1, wherein each of the first plurality of connecting parts connecting each of the first and the second plurality of communicating lines with each of the first plurality of disk drives, and each of the second plurality of connecting parts connecting each of the first and the second plurality of communicating lines with each of the second plurality of disk drives.

3. (previously presented) A disk storage system according to claim 2, wherein each of the first plurality of communicating lines corresponding to the first plurality of disk drives are a normal communication route, and each of the second plurality of communicating lines corresponding to the first plurality of disk drives are communication route in case of a failure of each of the first plurality of communicating lines.

4. (previously presented) A disk storage system according to claim 3, wherein each of the first plurality of communicating lines corresponding to the first plurality of disk drives are a normal communication route, and each of the second plurality of communicating lines corresponding to the first plurality of disk drives are communication route in case of a failure of the first loop.

5. (previously presented) A disk storage system according to claim 4, wherein communication is performed from each of the first plurality of communicating lines to each of the first plurality of disk drives via each of the first plurality of connecting parts when no failure has occurred, however communication is switched from some of the first plurality of communicating lines to some of the second plurality of communicating lines when a failure has occurred in some of the first plurality of communicating lines, and communication is performed from some of the second plurality of communicating lines to some of the first plurality of disk drives via some of the first plurality of connecting parts.

6. (previously presented) A disk storage system according to claim 5, wherein communication is performed from each of the first plurality of communicating lines to each of the first plurality of disk drives via each of the first plurality of connecting part when no failure has occurred however communication is switched from some of the first plurality of communicating lines to some of the second plurality of communicating lines when a failure has occurred in the first loop, and communication is performed from some of the second plurality of communicating lines to some of the first plurality of disk drives via some of the first plurality of connecting parts.

7. (previously presented) A disk storage system according to claim 6, wherein each of the second plurality of communicating lines corresponding to the second plurality of disk drives are a normal communication route, and each of the

first plurality of communicating lines corresponding to the second plurality of disk drives are communication route in case of a failure of each of the second plurality of communicating lines.

8. (previously presented) A disk storage system according to claim 7, wherein each of the second plurality of communicating lines corresponding to the second plurality of disk drives are a normal communication route, and each of the first plurality of communicating lines corresponding to the second plurality of disk drives are communication route in case of a failure of the second loop.

9. (previously presented) A disk storage system according to claim 8, wherein communication is performed from each of the second plurality of communicating lines to each of the second plurality of disk drives via each of the second plurality of connecting parts when no failure has occurred, however communication is switched from some of the second plurality of communicating lines to some of the first plurality of communicating lines when a failure has occurred in some of the second plurality of communicating lines, and communication is performed from some of the first plurality of communicating lines to some of the second plurality of disk drives via some of the second plurality of connecting parts.

10. (previously presented) A disk storage system according to claim 9, wherein communication is performed from each of the second plurality of communicating lines to each of the second plurality of disk drives via each of the second plurality of connecting parts when no failure has occurred, however

communication is switched from some of the second plurality of communicating lines to some of the first plurality of communicating lines when a failure has occurred in the second loop, and communication is performed from some of the first plurality of communicating lines to some of the second plurality of disk drives via some of the second plurality of connecting parts.

11. (original) A disk storage system according to claim 1, wherein some of the first plurality of connecting parts connect one of the first plurality of communicating lines, and some of the second plurality of connecting parts connect one of the second plurality of communicating lines.

12. (previously presented) A disk storage system according to claim 11, wherein each of the first plurality of communicating lines corresponding to the first plurality of disk drives are a normal communication route, and each of the second plurality of communicating lines corresponding to the first plurality of disk drives are communication route in case of a failure of each of the first plurality of communicating lines.

13. (previously presented) A disk storage system according to claim 12, wherein each of the first plurality of communicating lines corresponding to the first plurality of disk drives are a normal communication route, and each of the second plurality of communicating lines corresponding to the first plurality of disk drives are communication route in case of a failure of the first loop.

14. (previously presented) A disk storage system according to claim 13, wherein communication is performed from each of the first plurality of communicating lines to each of the first plurality of disk drives via each of the first plurality of connecting parts when no failure has occurred, however communication is switched from some of the first plurality of communicating lines to some of the second plurality of communicating lines when a failure has occurred in some of the first plurality of communicating lines, and communication is performed from some of the second plurality of communicating lines to some of the first plurality of disk drives via some of the first plurality of connecting parts.

15. (previously presented) A disk storage system according to claim 14, wherein communication is performed from each of the first plurality of communicating lines to each of the first plurality of disk drives via each of the first plurality of connecting parts when no failure has occurred, however communication is switched some of the first plurality of communicating lines to some of the second plurality of communicating lines when a failure has occurred in the first loop, and communication is performed from some of the second plurality of communicating lines to some of the first plurality of disk drives via some of the first plurality of connecting parts.

16. (previously presented) A disk storage system according to claim 15, wherein each of the second plurality of communicating lines corresponding to the second plurality of disk drives are a normal communication route, and each of the first plurality of communicating lines corresponding to the second plurality of disk

drives are communication route in case of a failure of each of the second plurality of communicating lines.

17. (previously presented) A disk storage system according to claim 16, wherein each of the second plurality of communicating lines corresponding to the second plurality of disk drives are a normal communication route, and each of the first plurality of communicating lines corresponding to the second plurality of disk drives are communication route in case of a failure of the second loop.

18. (previously presented) A disk storage system according to claim 17, wherein communication is performed from each of the second plurality of communicating lines to each of the second plurality of disk drives via each of the second plurality of connecting parts when no failure has occurred, however communication is switched from some of the second plurality of communicating lines to some of the first plurality of communicating lines when a failure has occurred in some of the second plurality of communicating lines, and communication is performed from some of the first plurality of communicating lines to some of the second plurality of disk drives via some of the second plurality of connecting parts.

19. (previously presented) A disk storage system according to claim 18, wherein communication is performed from each of the second plurality of communicating lines to each of the second plurality of disk drives via each of the second plurality of connecting parts when no failure has occurred, however communication is switched from some of the second plurality of communicating lines

to some of the first plurality of communicating lines when a failure has occurred in the second loop, and communication is performed from some of the first plurality of communicating lines to some of the second plurality of disk drives via some of the second plurality of connecting parts.

20. (previously presented) A disk storage system according to claim 1, wherein the first plurality of communicating lines corresponding to the first plurality of disk drives are a normal communication route, and some of the second plurality of communicating lines corresponding some of the first plurality of disk drives are communication route in case of a failure of some of the first plurality of communicating lines.

21. (previously presented) A disk storage system according to claim 20, wherein the second plurality of communicating lines corresponding to the second plurality of disk drives are a normal communication route, and some of the first plurality of communicating lines corresponding to some of the second plurality of disk drives are communication route in case of a failure of some of the second plurality of communicating lines.

22. (previously presented) A disk storage system according to claim 1, wherein the first plurality of communicating lines corresponding to the first plurality of disk drives are a normal communication route, and the second plurality of communicating lines corresponding to the first plurality of disk drives are communication route in case of a failure of the first loop.

23. (previously presented) A disk storage system according to claim 22, wherein the second plurality of communicating lines corresponding to the second plurality of disk drives are a normal communication route, and the first plurality of communicating lines corresponding to the second plurality of disk drives are communication route in case of a failure of the second loop.

24. (previously presented) A disk storage system according to claim 1, wherein communication is performed from the first plurality of communicating lines to the first plurality of disk drives via the first plurality of connecting parts when no failure has occurred, however communication is switched from some of the first plurality of communicating lines to some of the second plurality of communicating lines when a failure has occurred in some of the first plurality of communicating lines, and communication is performed from some of the second plurality of communicating lines to some of the first plurality of disk drives via some of the first plurality of connecting parts.

25. (previously presented) A disk storage system according to claim 24, wherein communication is performed from the second plurality of communicating lines to the second plurality of disk drives via the second plurality of connecting parts when no failure has occurred, however communication is switched from some of the second plurality of communicating lines to some of the first plurality of communicating lines when a failure has occurred in some of the second plurality of communicating lines, and communication is performed from some of the first plurality

of communicating lines to some of the second plurality of communicating lines communicate with some of the second plurality of disk drives via some of the second plurality of connecting parts.

26. (previously presented) A disk storage system according to claim 1, wherein communication is performed from the first plurality of communicating lines to the first plurality of disk drives via the first plurality of connecting parts when no failure has occurred, however communication is switched from the first plurality of communicating lines to the second plurality of communicating lines when a failure has occurred in the first loop, and communication is performed from the second plurality of communicating lines to the first plurality of disk drives via the first plurality of connecting parts.

27. (previously presented) A disk storage system according to claim 26, wherein communication is performed from the second plurality of communicating lines to the second plurality of disk drives via the second plurality of connecting parts when no failure has occurred, however communication is switched from the second plurality of communicating lines to the first plurality of communicating lines when a failure has occurred in the second loop, and communication is performed from the first plurality of communicating lines to the second plurality of disk drives via the second plurality of connecting parts.